

SAFETY ELEMENT

GRIDLEY GENERAL PLAN

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City Council  
of the  
City of Gridley  
Gridley, California



## I. INTRODUCTION AND POLICY

In recognition of the possibility of loss of life or damage to property through either natural or man made causes, the State of California Legislature has mandated that each city and county adopt a Safety Element to its General Plan for:

"the protection of the community from fires and geologic hazards, including features necessary for protection such as evacuation routes, peak load water supply requirements, minimum road widths, clearances around structures, and geologic hazard mapping in areas of known geologic hazard.

The concept behind the mandating of the Safety Element is similar to that which led the State to mandate Seismic, Noise and Conservation Elements, namely, to make the subject matter of the elements a consideration of the local planning process. Unlike the other elements where the focus is limited to one area, the Safety Element is directed to all possible hazards of the planning area, including seismic activity, flooding, noise, fire, air pollution and water pollution.

Thus, it is the purpose of the Safety Element to identify area hazards, to advocate preventive and remedial measures, and to formulate emergency plans so that in the event of disaster, the City can respond and control the disaster as efficiently and rapidly as possible. The reasons for adoption of the element are like those which led municipal governments to adopt Building Codes, Zoning Ordinances, Fire Prevention Codes and Subdivision Regulations, namely, to reduce loss of life, injuries, damage to property and the economic and social dislocations resulting from dangerous and catastrophic events.



By establishing official city policy with respect to safety, the City of Gridley will set forth such requirements and programs as deemed necessary to reduce to an acceptable level the element of risk to the community and its citizens. Many of the considerations involved herein have already been incorporated into the City's development program, thus, in some instances, the function of the Safety Element will be merely to summarize those concerns into one document.

For safety planning to be effective, there must be cooperation among the different departments of City government, cooperation among different governmental agencies and support and assistance from the citizens of the community. Safety planning should be thought of as both short and long term investments for the community. It is short term in that protection is provided immediately. It is long term in that providing comparable protection at a later date is normally more expensive than providing the same protection initially. In the long run, proper and adequate safety planning will consistently pay for its costs by the lives and property that will be saved.

## II. SAFETY HAZARDS

Safety hazards can occur as either a result of the actions of nature or works of man. Nature produces hazards such as seismic activity, volcanic activity, high winds, heavy rainstorms, lightning, flooding and extreme fire danger. Man sets fires, builds unsafe structures, builds in dangerous locations and pollutes his environment. Attached to each of these occurrences is an element of risk.

For most of us, the evaluation of risk is a part of our day-to-day lives. We constantly evaluate the possibility of injury to ourselves before we cross a street, while driving a car and before many other actions. The actual form of danger that we can expect to encounter varies both in type and intensity depending upon location and activity. Within developed areas, the degree of risk is more acute than in sparsely settled areas because of the concentration of structures and humanity. This urbanization leads to more people and structures exposed to danger in an area and to an increase in the activity pattern of the area with a resultant increase in the accident potential.

In discussing safety hazards, this document will be limited to those hazards which have the possibility of damage to extensive sections of the planning area. The element will not be concerned with those actions of individuals which can lead to personal injury or minor loss of property, such as traffic accidents, accidents in the home or criminal actions.



### Seismic Hazards

Seismic and geologic hazards of the planning area are discussed in the Seismic Safety Element of the Gridley General Plan. The only seismic activity expected to have a major impact upon the planning area is ground shaking.

### Flood Hazard

Flooding is not foreseen as a significant hazard of the planning area with the exception of the possibility of inundation along the eastern edge by the Feather River. When flood plain information reports on the Feather River become available, they should be analyzed for possible flood encroachment into the planning area. If the possibility of flooding does exist from flood levels occurring at intervals of 100 years or less, then such measures as necessary should be taken to meet the objectives of the National Flood Insurance Program being administered by the Department of Housing and Urban Development. Likewise, flood inundation maps being prepared for the partial or total failure of Oroville Dam for the California Office of Emergency Services should be reviewed for impact upon the planning area and especially on evacuation routes.

### Fire Hazard

Currently, fire constitutes the greatest danger to the planning area. Primary areas of hazard are the untended vacant lots or fields of the planning area, buildings with inadequate electrical or heating systems, buildings with inadequate fire separation, and structures used for storage of flammable or explosive materials. Fires within the planning area are mainly the result of faulty construction or carelessness. Fires caused by

lightning are not a significant factor in the planning area.

#### Noise Pollution

Community noise is discussed in the Noise Element of the Gridley General Plan. Noise is not now considered a major safety hazard of the planning area. Minor noise problems may exist in those residential areas adjacent to the cannery, the railroad and the State highway. For the most part, noise levels within the planning area are below the maximum ambient noise levels recommended by the Noise Element. Noise levels which could cause permanent or temporary physical or psychological effects are temporary in nature or confined to areas where there is no general impact upon surrounding areas or the community.

It should be emphasized, that in order to prevent the occurrence of temporary loud noises or the gradual increase of existing noise levels, the City must begin evaluating major development projects now to maintain the quiet normally associated with the community.

#### Air Pollution

Air pollution has emerged as a widespread public health problem in recent years by its effect on extensive areas of the State. Today, almost all areas of the Sacramento Valley experience some form of air pollution. Its effects have been noted on plants, human health, visibility, and community growth.

There are several causes which have been conducive to an increase in air pollution, including climate, topography, increasing urbanization, increasing vehicle registrations, agricultural burning and industrialization. For instance, on many occasions during the year the Sacramento Valley acts as a holding tank when



inversions, accompanied by periods of low wind, trap air in the valley.

The State Air Resources Board has established monitoring stations at both Chico and Yuba City from which an indication of the air quality of the Gridley area can be discerned. These stations measure various types of pollutants which are summarized in Table 1. At present, only two pollutants are of concern to the planning area: oxidants and suspended particulates. Oxidants have exceeded National Air Quality Standards at both the Chico and Yuba City Stations. Suspended particulates have been increasing with the growth of the rice industry and its related agricultural burning.

Table 1  
AIR QUALITY DATA

Pollutant	Year	Chico		Yuba City		Season of Highest Level
		Hourly Average Concentrations Parts per Million				
		High	Mean	High	Mean	
Oxidant	1971	0.15	0.03	0.15	0.031	Jul-Sep
	1972	0.16	0.034	0.17	0.032	
Carbon Monoxide	1971	17.00	1.80			Jan-Mar
	1972	15.00	1.60			
Nitrogen Dioxide	1971	0.10	0.019	0.13	0.022	Jul-Sep
	1972	0.11	0.02	0.10	0.019	
Nitric Oxide	1971	0.39	0.011	0.52	0.015	Jan-Mar
	1972	0.40	0.01	0.47	0.09	
Oxides of Nitrogen	1971	0.43	0.03	0.61	0.037	Jan-Mar
	1972	0.46	0.03	0.55	0.028	
Hydro-Carbons	1971	18.00	3.10	13.00	2.70	Jan-Mar
	1972	10.00	2.90	11.00	2.30	Oct-Dec
*Suspended	1971	62.00	3.40	20.00	3.40	Jan-Mar
Particulate	1972	27.00	2.90	32.00	2.40	Oct-Dec

\*2-hour COH values, not parts per million

Source: Air Resources Board, Ten Year Summary of California Air Quality Data, January, 1974.



## Water Pollution

Water pollution occurs as a result of residential wastes, industrial wastes, agricultural pesticides and fertilizers, and soil leaching. For the most part, water quality in the area is suitable for domestic uses; however, increasing use of septic tanks and leach fields, in the long run, will lead to a deterioration of local water quality. Recent septic tank failures in the Ayers Tract area led to annexation in order to hookup to the Gridley sanitary sewer system.

Ground water within the planning area is used for domestic and municipal water supply, for irrigation and for stock watering. The City of Gridley currently furnishes its entire water supply from municipally owned wells. In the event of ground water contamination or withdrawal, the Feather River would be an alternate source of supply.

### III. SAFETY GOALS

Safety is an important consideration of the community development process, whether it be fire protection, construction, water supply, civil disorder, accident or war. In order to reduce the potential impact of disaster to the lowest practical level, the City of Gridley adopts the following safety goals:

1. Minimize the impact of hazards upon people and property by incorporation of safety considerations into the community development process.
2. Minimize the expansion or intensification of disasters once an event has occurred by insuring adequate community preparedness for rapid and efficient response.
3. Provide a reasonable safe habitat in which people may live, work or play.
4. Minimize loss of life and damage to property in the event of disaster.
5. Make existing structures as safe as possible.
6. Achieve the lowest possible community fire rating as fiscally possible for the City and its citizens.
7. Coordinate and augment area emergency response and mutual assistance agreements with neighboring cities, Butte County and the State of California.
8. Support reasonable County, State and Federal efforts, plans and programs for disaster prevention and response.



#### IV. ACCEPTABLE RISK

The basic objective of determining acceptable risk is to aid decision makers, developers, and citizens in defining the relationship between the criticalness of the use versus the effect of failure or extent of loss. In other words, what level of loss of life or damage to property would be unacceptable to the community was unable to keep the fire from spreading to adjacent property as a result of inadequate water supply, would the property loss be more acceptable than the cost of providing an adequate water supply.

Each hazard has an element of risk associated with it depending upon location, structure, community values and degree. For each type of hazard there are four possibilities which may occur:

1. The probability that the hazard will occur.
2. The probability that if the hazard does occur measures taken to mitigate the hazard will be sufficient to reduce damage to life and property.
3. The probability that if the hazard does occur measures taken to mitigate the hazard will not be sufficient.
4. The probability that the hazard will not occur.

Since risk is a function of chance, there is an inherent degree of uncertainty in using risk as a basis for land use planning.

Much can be done to reduce the element of risk associated with each hazard. If risk reduction measures are estab-

lished, the amount of damage to property and injury to life will be reduced. The guidelines for the Safety Element prepared by the Council on Intergovernmental Relations define acceptable risk as follows: "the level below which no specific action by the local government is deemed necessary to protect life and property."

While maximum safety is desired, the level of acceptable risk must be related to the costs, subjective feelings, emotional reactions, fiscal capabilities and demands of each community. Considering the available factors, it is the judgment of the City of Gridley that the levels of acceptable risk as delineated in Table 2 are acceptable levels and should not be exceeded.

Within Table 2, Group 1 is the category of uses which failure of or damage to would be least acceptable to the community. Group 7 is the category of uses which failure of or damage to would be most acceptable to the community.



Table 2

## ACCEPTABLE RISK RELATED TO VARIOUS LAND USES

Level of Acceptable Risk	Land Use Groups
Extremely low	<p>Group 1: Vulnerable structures; the failure of which might be catastrophic -- such as nuclear reactors, large dams, and plants manufacturing or storing explosive or toxic materials.</p> <p>Group 2: Vital public utility facilities, such as electric transmission lines (120 KV and above), substations, regional water supply distribution facilities, such as aqueducts, valley pipelines, treatment plants and pumping stations; and gas transmission lines.</p>
Low	<p>Group 3: Major communication and transportation facilities, such as airports, telephone lines and terminals, bridges, tunnels, freeways and overpasses, and evacuation routes. Emergency facilities such as hospitals, fire and police stations, ambulance services and rescue stations.</p> <p>Group 4: Involuntary occupancy facilities, such as convalescent and nursing homes, schools and prisons. High occupancy buildings, such as theaters, arenas, large office buildings and hotels, and large apartment buildings or complexes.</p>
Moderately low	<p>Group 5: Public utility facilities, such as metropolitan area transmission lines less than 120 KV, local water supply and sewage lines. Buildings of major importance to the local economy.</p>
Ordinary risk level	<p>Group 6: Minor transportation facilities, such as arterials and parkways. Low to moderate occupancy buildings, such as single-family residences, small apartment buildings, motels, and small commercial or industrial buildings.</p> <p>Group 7: Very low occupancy buildings such as warehouses, storage areas, and farm structures. Open space and recreation areas, farms lands and sanitary landfills.</p>

Source: Duncan and Jones, Initial Chico General Plan, Chico, California, July, 1974.

## V. SAFETY STANDARDS

Safety hazards can most easily be controlled by taking appropriate measures as necessary to minimize the degree of risk involved to a structure or its occupants. For instance, the level of risk involved from seismic or flood danger can be mitigated through prohibiting development in areas of hazard or by requiring such additional construction standards as earthquake or flood proofing. In areas of man made hazard, measures such as fire walls, increased building separations, building sprinkling, or storage controls can be required before plan approval.

It should be emphasized that safety relates to all aspects of the community development process, and safety planning must be a continuous program of evolution and improvement. Failure to incorporate safety considerations into the planning process will only cause an increase in suffering and the cost of rebuilding at a later date.

In order to meet the objectives of the Safety Element, the City of Gridley should incorporate the following standards into its planning process:

### Seismic Protection

Require all new construction within the community to be constructed according to the standards of the 1973 Edition of the Uniform Building Code. The City should also require that all essential, critical or high occupancy facilities be able to withstand an earthquake intensity of VIII on the Modified Mercalli Scale of 1931. Furthermore, the City should meet the other objec-



tives as outlined in the Seismic Element of the Gridley General Plan.

#### Flood Protection

Require that all habitable structures that would lie within the 100 year floodplain of the Feather River to be constructed so that any inhabitants would be protected to a level above the 100 year flood elevation; and any utilities serving such structures will be able to withstand inundation.

#### Fire Protection

Require that the community fire protection grade level as determined by a certified rating agency shall not exceed a grade of 4 by insuring that the following operational characteristics are fully adequate and reliable in meeting the City's fire protection needs.

1. Fire department manning to be based on the amount of area to be protected, the kind of fires to be encountered, the City's population, the inter-jurisdictional agreements the City enters into and the City's fiscal capability.
2. Fire fighting equipment and location to be determined by the variety of structures in the area, the available water supply, outside aid, the amount of area to be protected, and the kind of fires to be encountered. Furthermore, facilities for the maintenance and repair of equipment should be sufficient to minimize equipment downtime. Equipment should be maintained in a ready and usable state in

locations determined by necessary response time and any physical barriers slowing response.

3. Communication equipment capable of 24 hour alarm notification, equipment dispatching, unit coordination and coordination with other jurisdictions. Backup systems to be provided in case of failure.
4. Water supply in such quantity that maximum daily consumption and required fire flow requirements can be met at the same time. The supply system should be such that in case of pump failure, water can be shunted to critical areas from other wells.
5. A distribution system of sufficient capacity so required fire flows can be delivered to all built up areas with consumption at the maximum daily rate. Wherever possible, a gridiron network should be used with cross connections for looping and mutual reinforcement. Mains should be valved so that sections can be bypassed in case of failure. Main sizes under eight inches should not be dead-ended.
6. A fire hydrant system whose design and spacing is based on the available fire flow and the type of land uses being protected. Hydrants in commercial areas should be at smaller intervals than those in residential areas. The maximum fire hydrant interval should not exceed five hundred feet.
7. Fire zones delineated for the protection of closely built commercial or industrial districts to keep



fires from spreading from building to building.

Restrictions would include minimum fire wall requirements and restricted construction materials.

8. Enforcement of Title 19 of the California Administrative Code, a Uniform Fire Code or Fire Prevention Code, and a Uniform Housing Code for abatement of unsafe residences.

#### Street Design

Projects designed so no apartment, commercial or industrial unit is more than 300 feet away from any fire hydrant, the maximum distance a hose should be laid by hand. Where development occurs at the property line, fire walls should be required based on the Uniform Building Code or the appropriate fire zone district, whichever is most restrictive. For commercial or industrial complexes with more than one roof, two exits should be required for each tenant space.

#### Noise Protection

Noise levels shall not exceed the levels prescribed in the Noise Element of the General Plan. As major new developments or new circulation routes occur, their potential effect on existing noise levels will be evaluated prior to plan approval.

#### Air Quality Protection

Air pollution within the planning area shall not exceed the National Ambient Air Quality Standards as established by the Federal or State governments. Those projects which have the potential for air quality degradation should be required to obtain a Air Pollution Permit from the County Air Pollution Control District.

Water Quality Protection

The City shall oppose the development of septic tanks in those areas adjacent to the City boundary by working through the Local Agency Formation Commission and the County Planning Commission to force annexations. It is the policy of the City of Gridley to prevent the degradation of ground waters as related to present or historical quality levels. For domestic or municipal water supply, the first two layers of ground water should be considered to be polluted.

## VI. CONTINGENCY PLANS

The California Emergency Services Act provides the basis for emergency preparedness programs of cities and counties. This Act requires local jurisdictions to adopt ordinances, resolutions and plans which shall establish organizations responsible for emergency preparedness and emergency relief operations. As such, the Act requires that the City of Gridley be able to respond to:

1. Earthquakes
2. Floods
3. Fires
4. Accidents
  - a. Transportation
  - b. Industrial
5. Civil Disorders
6. National Emergencies

In 1973, the City of Gridley, in accordance with State requirements, adopted the City of Gridley Emergency Plan. By adopting this plan, Gridley is able to accomplish the general objectives of the Act, including:

1. A basis (organization) for the conduct and coordination of operations and the management of critical resources during emergencies.
2. A mutual understanding of the authority, responsibilities, functions, and operations of civil government during emergencies.



3. A medium for cooperation with County and State emergency organizations, non-governmental agencies and organizations which have the resources capable of meeting emergency requirements.

It is the intent of the Act to insure that local jurisdictions will be prepared in the event of emergencies and that they shall be as self-sufficient as possible. Each agency will be able to provide relief to other agencies and also be able to receive aid from outside forces.

In order to implement the Act, the City's plan is directed towards accomplishing the following tasks:

1. Provide a continuity of local government.
2. Establish a plan of operation with general responsibilities for the various government agencies.
3. Save lives and property.
4. Coordinate the repair and restoration of essential services.
5. Provide for the protection, use and distribution of resources.
6. Coordinate operations with other jurisdictions, organizations or affected private parties.
7. Accomplish the removal of people from dangerous areas through safe and orderly evacuation.

Thus, Gridley would be providing activities, such as leadership, fire protection, law enforcement, health and medical care, shelter, traffic control, engineering, utility repair, and supply of basic articles, including:

1. Food
2. Petroleum
3. Personnel
4. Vehicles
5. Housing
6. Clothing
7. Medicines

In conjunction with the establishment of an emergency plan is the delineation of emergency evacuation routes. The use of these routes is two-fold: (1) to provide a means of passage out of the community and (2) to provide a route to or through the community from other areas. For the Safety Element the following routes are designated as evacuation routes:

1. State Highway 99
2. Oroville-Gridley Highway
3. Gridley-Colusa Highway
4. West Biggs-Gridley Road

Among the initial emergency operations, efforts would be directed towards maintaining these routes in a passable condition for immediate or delayed evacuation. The actual use of any one route would be determined by the type of emergency and the location of the dangerous event.

## VII. SAFETY PLAN

To assure continued and increasing protection for both life and property, the City of Gridley should incorporate into its planning process the standards as outlined in this element and the following recommendations:

1. Continued compatibility of the City of Gridley Emergency Plan with County and State emergency plans.
2. Adopt and enforce the following codes for new and remodeled construction:
  - a. 1973 Uniform Building Code
  - b. 1973 Uniform Mechanical Code
  - c. 1973 Uniform Fire Code or the 1970 Fire Prevention Code
  - d. 1973 Uniform Plumbing Code
  - e. 1975 National Electrical Code
3. Establish a Fire Zone District for all Commercial and Industrial areas.
4. Provide a method for abatement of substandard or dangerous housing similar to that provided by the 1973 Uniform Housing Code
5. Insure that Title 19, Life Safety of the California Administrative Code, is enforced within the community.
6. Establish Fire Department and Police review of major development proposals within the planning process.



## APPENDIX NO. 1

## AMBIENT AIR QUALITY STANDARDS APPLICABLE IN CALIFORNIA

Pollutant	Averaging Time	California Standards	Federal Standards <sup>2</sup>	
		Concentration	Primary <sup>1</sup>	Secondary <sup>2</sup>
Photochemical Oxidants (Corrected for NO <sub>2</sub> )	1 Hour	0.10 ppm	0.08 ppm	Same as Primary Standards
Carbon Monoxide	12 Hours	10 ppm	--	Same as Primary Standards
	8 Hours	--	9 ppm	
	1 Hour	40 ppm	35 ppm	
Nitrogen Dioxide	Annual Average	--	0.05 ppm	Same as Primary Standards
	1 Hour	0.25 ppm	--	
Sulfur Dioxide	Annual Average	--	0.03 ppm	0.02 ppm
	24 Hours	0.04 ppm	0.14 ppm	0.10 ppm
	3 Hours	--	--	0.5 ppm
	1 Hour	0.5 ppm	--	--
Suspended Particulate Matter	Annual Geometric Mean	60 $\mu$ g/m <sup>3</sup>	75 $\mu$ g/m <sup>3</sup>	60 $\mu$ g/m <sup>3</sup>
	24 Hours	100 $\mu$ g/m <sup>3</sup>	260 $\mu$ g/m <sup>3</sup>	150 $\mu$ g/m <sup>3</sup>
Lead (Particulate)	30-Day Average	1.5 $\mu$ g/m <sup>3</sup>	--	--
Hydrogen Sulfide	1 Hour	0.03 ppm	--	--
Hydrocarbons (Corrected for Methane)	3 Hours (6-9 a.m.)	--	0.24 ppm	Same as Primary Standards
Visibility Reducing Particles	1 observation	Visibility to 10 miles when the relative humidity is less than 70%	--	--

## NOTES:

<sup>1</sup> National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency (EPA).

<sup>2</sup> National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after implementation plan is approved by the EPA.

<sup>3</sup> Federal standards, other than those based on annual averages or annual geometric means, are not to be exceeded more than once per year.

SOURCE: State Air Resources Board.





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